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EXAMINER
PARK, JUNG H

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2616	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)
	10/602,940	ABDO ET AL.
	Examiner	Art Unit
	Jung Park	2616

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) Responsive to communication(s) filed on 10 July 2007.
- 2a) This action is FINAL. 2b) This action is non-final.
- 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) Claim(s) 1-26 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) Claim(s) 1-26 is/are allowed.
- 6) Claim(s) _____ is/are rejected.
- 7) Claim(s) _____ is/are objected to.
- 8) Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) The specification is objected to by the Examiner.
- 10) The drawing(s) filed on _____ is/are: a) accepted or b) objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 - a) All b) Some * c) None of:
 1. Certified copies of the priority documents have been received.
 2. Certified copies of the priority documents have been received in Application No. _____.
 3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)	4) <input type="checkbox"/> Interview Summary (PTO-413)
2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)	Paper No(s)/Mail Date. _____
3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)	5) <input type="checkbox"/> Notice of Informal Patent Application
Paper No(s)/Mail Date _____	6) <input type="checkbox"/> Other: _____

DETAILED ACTION

Response to Remark

1. This communication is considered fully responsive to the Amendment filed on 07/10/2007.
 - a. The objection to the specification is withdrawn since it has been amended accordingly.
 - b. The objections to claims 1, and 10-13 are withdrawn since they have been amended accordingly.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.
3. Claims 1-12 and 16-26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Huang (US 7020138, "Huang") in view of Gundavelli (US 6795403, "Gundavelli") and further in view of Dobbins et al. (US 6711171, "Dobbins") and Koyanagi et al. (US 7187658, "Koyanagi").

Regarding claim 1, Huang discloses a system for automatically discovering nodes on a network comprising:

- an announcer logic (a logic, not shown, in hosts & routers fig.2) configured to transmit an announcement packet (IP datagram including ICMP message, see col.4, ln.61), the announcement packet comprising a node address (IP address included within IP datagrams to a destination host, see col.4, ln.48-50) and a forward counter (TTL, see

col.4, ln.48-61) to a destination node (24 fig.2; col.4, ln.48-61) associated with the node in a static type list (static routing table, see Table 1 and static routing operation, see col.2, ln.64-65); and

- a listener logic (a logic, not shown, in hosts & routers fig.2) configured to receive the announcement packet (receiving IP datagram including ICMP message, see col.4, ln.55-61), further configured to add at least one new node (find a series of routers, see col.3, ln.37-39). Huang also discloses that IP packets are transmitted if the forward counter is greater than zero (router abandons when TTL, i.e., forward counter, is zero, see col.4, ln.55-57).

Huang discloses an example of sending IP datagrams to one destination node in the static route list, but does not explicitly disclose the limitation of "to all nodes in the list having a static type". However, Gundavelli explicitly discloses an automatic node discovery method by sending ICMP Echo request to all the IP addresses (col.2, ln.17-30). Therefore, it would have been obvious to one of ordinary skill in the art at the time of applicant's invention to apply ICMP Echo request to all IP addresses in the static table of Huang so as to efficiently build communication system by using automatic node discovery method.

Huang discloses a dynamic routing algorithm/protocol to find a suitable routing path (col.2, ln.14-20), but lacks what Dobbins discloses, "a forwarder logic (a logic, not shown, in IP routers fig.21) configured to transmit the node address and the forward counter associated with the new node (advertise by using RIP or OSPF, see col.24, ln.22-24; IP address and Hop, see routing tables in col.24), to all known nodes in the list (routing tables, see col.24) and the new node has a discovered type (dynamic/routed type, see tables in col.24)." Therefore, it would have been obvious to one of ordinary skill

in the art at the time of applicant's invention to apply the advertisement of routing protocol taught by Dobbins into the dynamic routing method of Huang so as to properly transmit/forward IP packets by synchronizing routing tables of routers in a network.

To verify ICMP packet format comprising a node address and a forward counter, the examiner cites Koyanagi. Koyanagi discloses different types of ICMP packets shown in Fig.23A, 23B, and 25A.

Regarding claim 2, Huang discloses, "wherein the announcer logic is further configured to transmit the node address and the forward counter using a unicast address (send IP datagrams to a destination host address, see col.4, ln.48-50)."

Regarding claim 3, Huang discloses, "wherein the forward counter is decremented upon receipt (subtract, see col.4, ln.51-55)."

Regarding claim 4, Huang discloses, "wherein the forward counter is decremented before transmission (col.4, ln.51-55)."

Regarding claim 5, Huang discloses, "further comprising a network interface configured to transmit and receive data on the network (inherent to have an interface for transmitting and receiving functions, see col.4, ln.48-col.5, ln.17)."

Regarding claim 6, Huang discloses, "wherein the announcer logic is further configured to transmit the node address and the forward counter via the network interface (network interface, see fig.2)."

Regarding claim 7, Huang discloses, "wherein the node address is an IP address (IP datagrams, see col.4, ln.48)."

Regarding claim 8, Huang discloses an ICMP message, but lacks what Gundavelli discloses, "the announcement packet is an ICMP packet with type Echo Request (ICMP Echo request, see col.2, ln.17-20). Therefore, it would have been obvious to one of ordinary skill in the art at the time of applicant's invention to utilize ICMP Echo Request taught by Gundavelli into the ICMP message of Huang in order to carry out automatic discovery by sending ICMP Echo request. That is, to get ICMP Echo Reply message to have response from destination nodes without using an extra message since the Echo Reply is an ICMP message generated in response to an ICMP Echo Request message, and is mandatory for all hosts and routers.

Regarding claim 9, it is a claim corresponding to claim 1, except the limitations of "initializing a first known node list". However, Huang also discloses the limitations, "initializing a first known node list (pre-built static table, see col.1, table 1 and col.2, ln.65-67) and is therefore rejected for the similar reasons set forth in the rejection of claim 1.

Regarding claims 10 and 12, they are claims corresponding to claims 2 & 4, respectively and are therefore rejected for the similar reasons set forth in the rejection of claims 2 and 4.

Regarding claim 11, Huang does not explicitly disclose, "wherein transmitting onto the network to all known nodes and all discovered nodes further comprises transmitting the node address and the forward counter using a unicast address." However, Gundavelli discloses an automatic discovery method by sending ICMP Echo requests to all IP addresses, i.e., a unicast address)." Therefore, it would have been obvious to one of ordinary skill in the art at the time of applicant's invention to apply the automatic discovery method taught by Gundavelli into the dynamic routing method disclosed by Huang so that the ICMP Echo message is forwarded to all IP nodes when an intermediate node receives the ICMP message from other nodes. One would be motivated to forward the ICMP message to all IP nodes so as to prevent any new nodes being missing from discovering procedure.

Regarding claim 16, it is a claim corresponding to combination of claims 1, 4, & 5, except of the limitations of "a list of discovered nodes, where each discovered node comprises a node address and a forward counter". Huang further discloses the limitations, "a list of discovered nodes, where each discovered node comprises a node address and a forward counter (IP address is obtained and IP datagram has a TTL, see col.4, ln.67-col.5, ln.4). Therefore, this claim is rejected for the similar reasons set forth in the rejection of claim 1.

Regarding claims 17-21, 25, & 26, they are claims corresponding to claims 2, 11, 3-5, 7, & 8, respectively and are therefore rejected for the similar reasons set forth in the rejection of the claims.

Regarding claim 22-24, they are claims corresponding to network interface for the different logics recited in claim 6 and is therefore rejected for the similar reasons set forth in the rejection of claim 6.

4. Claims 13-15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Huang and Gundavelli in view of Dobbins and further in view of Quarterman et al. (US 20020177910, "Quarterman").

Regarding claim 13, Huang does not explicitly disclose, "detecting an unreachable node; deleting from the list, responsive to the detecting, each node with a discovery source matching the unreachable node; and announcing, to each node in the list, the deletion of each deleted node." However, Quarterman discloses the limitations of "detecting an unreachable node; deleting from the list, responsive to the detecting, each node with a discovery source matching the unreachable node (removes unreachable nodes, see ¶.58 and ICMP Echo request, see ¶.40)." Also, Dobbins discloses the limitation of "announcing, to each node in the list, the deletion of each deleted node (col.24, ln.22-24)". Therefore, it would have been obvious to one of ordinary skill in the art at the time of applicant's invention to apply the deletion method of Quarterman and advertisement method of Dobbins into the dynamic routing method of Huang so as to improve routing function by acquiring dynamically updated node information in the routers and having alternative paths.

Regarding claim 14, Huang does not explicitly disclose, "receiving a deletion announcement, wherein the deletion announcement comprises at least one node to be deleted; and deleting from the list, responsive to the receiving, each node corresponding

to the node to be deleted". However, Quarterman discloses a ping message to remove unreachable nodes (¶.58). Therefore, it would have been obvious to one of ordinary skill in the art at the time of applicant's invention to include the ping message as a deletion announcement as taught by Quarterman into the dynamic routing method of Huang so as to improve routing function by updating the routing table in routers.

Regarding claim 15, Huang does not explicitly disclose what Dobbins discloses, "forwarding, to each node in the list, the node to be deleted (col.24, ln.22-24)." Therefore, it would have been obvious to one of ordinary skill in the art at the time of applicant's invention to apply the advertising method taught by Dobbins into the dynamic routing method of Huang so as to improve routing function by acquiring dynamically updated node information in the routers and having alternative paths.

Response to Arguments

5. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office Action. However, the examiner responses applicant's arguments with respect to amended claims 1, 9, and 16, but are not persuasive.

At page 3, with respect to claim 1, applicant argues that Huang fails to disclose an announcement packet comprising a node address and a forward counter associated with each known node in a list.

In reply, what is the definition of announcement packet? Huang discloses IP datagram including ICMP message (see col.4, ln.61), which is equivalent to an announcement message since an announcement message is not defined at all. The limitations of "a node address and a forward counter" read on "sending IP datagrams to

a destination host because it is inherent that IP datagram includes IP node address and a forward counter as described in col.4, ln.48-61." The destination host receiving the packet is associated with each known node in a list (see 24 fig.2). To verify ICMP packet format comprising a node address and a forward counter, the examiner cites Koyanagi. Koyanagi discloses different types of ICMP packets shown in Fig.23A, 23B, and 25A. The examiner notes that the announcement packet is not defined in the claim and the examiner interprets the ICMP packet as an announcement packet.

At page 4, with respect to claim 9, applicant argues that the Office Action makes no mention of "adding to a second list of discovered nodes at least one new discovered node."

In reply, as rejected in claim 9 corresponding to claim 1, Dobin discloses the dynamic routing table added the discovered new nodes as shown in the tables in col.24. This dynamic routing table is the second list of discovered nodes.

At pages 4-5, with respect to claim 16, applicant argues that Huang does not disclose "transmitting to all known nodes in the first list, a node address and a forward counter associated with each known node."

In reply, Figure 2 of Huang shows that the destination node is the only known node in the first list as an example. As rejected in claim 16 corresponding to claim 1, Gundavelli explicitly discloses an automatic node discovery method by sending ICMP Echo request to all the IP addresses (col.2, ln.17-30). Therefore, it would have been obvious to one of ordinary skill in the art at the time of applicant's invention to apply

ICMP Echo request to all IP addresses in the static table of Huang so as to efficiently build communication system by using automatic node discovery method.

At page 6, applicant further argues that the TTL field is decremented after receipt, not before transmission."

In reply, the applicant deleted the limitations of "where the forward counter is decremented before transmission" in the amended claim 16, therefore, it is not necessary respond this argument.

Conclusion

6. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Contact Information

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jung Park whose telephone number is 571-272-8565. The examiner can normally be reached on Mon-Fri during 6:15-3:45.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Edan Orgad can be reached on 571-272-7884. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

JP
Jung Park
Patent Examiner

EDAN Q. ORGAD
SUPERVISORY PATENT EXAMINER

Edan Orgad 9/27/07